



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#15 reconsideration
7/24/01
CW

In re Application of:

GARY L. RUTLEDGE

Serial No.: 09/259,000

Filed: February 26, 1999

For: SINGLE CAMERA VIDEO
INSPECTION SYSTEM FOR
WATER WELLS AND BORE
HOLES

Group Art Unit: 2713

Examiner: Gims S. Philippe

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RESPONSE TO OFFICE ACTION

Commissioner of Patents and Trademarks
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action mailed January 16, 2001, Applicant argues as follows:

Status of Case

1. On October 30, 2000, Applicant filed a preliminary amendment for his Continued Prosecution Application. In the preliminary amendment, Applicant canceled claims 10-17, and 20-22 without prejudice. Applicant amended independent claims 1, 18, and 29, and amended dependent claims 2, 8, 19, and 24.

2. In an office action dated January 16, 2001, the Examiner withdrew the previous rejection of claim 1 as anticipated under 35 U.S.C. § 102(b) by the Federau patent (U.S. Patent No. 4,532,544). The Examiner raised a new ground of rejection for claim 1: that the claim is obvious under 35 U.S.C. § 103(a) over Federau. The Examiner also rejected claim 18 as being obvious in view of Federau. The Examiner rejected claim

29 as obvious under 35 U.S.C. § 103(a) over Federau in view of Barbour (U.S. Patent No. 5,652, 617) and further in view of Berman, et al. (U.S. Patent No. 5,528,453).

3. Applicant argues in this response that the rejections of independent claims 1, 18, and 29 on the basis of obviousness should be set aside. If the independent claims are not obvious and allowable, then all claims depending therefrom are of course allowable. MPEP, § 2143.03. Therefore Applicant will not discuss the rejections of the dependent claims, without waiving the right to do so if necessary later.

Claims Rejections under 35 U.S.C. § 103

Legal standard under Section 103

4. To establish a *prima facie* case of obviousness on the references cited, there must be:

- (a) The prior art references must teach or suggest *all* the claim limitations.
- (b) Some suggestion or motivation to modify the reference or combine reference teachings.
- (c) The prior art must suggest the desirability of the claimed invention.
- (d) There must be a reasonable expectation of success.

See, generally, MPEP § 2143.

Examiner's knowledge

5. The Examiner cites only the Federau patent in the present rejection of claims 1-4, 9, 18 and 19. If the Examiner relies upon evidence within his personal knowledge as to what would be obvious to one skilled in the art, then Applicant

respectfully requests the Examiner to reduce this knowledge to an affidavit as required by 37 C.F.R. Section 1.107(b).

Claim 1 in view of Federau—all limitations

6. Applicant will show that these references, when combined, do not teach or suggest all of Applicant's claim limitations. The Examiner fails to cite references containing, in combination, all elements of Applicant's claim. Therefore, no *prima facie* case of obviousness has been made. MPEP § 2143.03. The meaning of the claim elements is determined by reference to the specification. 37 C.F.R. § 1.75(d)(1). "The specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 39 USPQ 2d 1573, 1577 (Fed. Cir. 1996); citing *Markman v. Westview Instruments, Inc.*, 34 USPQ 2d 1321, 1330 (Fed. Cir. 1995) (en banc), *aff'd*, 38 USPQ 2d 1039 (1996). Applicant will discuss the several elements of his claim 1, although failure of the combined references to include any one of Applicant's limitations defeats the *prima facie* case of obviousness.

An image sensor

7. Federau does not disclose an "image sensor" as claimed. The Federau "sensor" is a line scanning device. Federau builds up a panoramic image of a bore by rotating a scanning line around the bore. As shown in Fig. 1 of Federau, and in col. 4, lines 26-32, the object space imaged by the Federau system is a "...narrow line-shaped area oriented parallel to the optical axis 19." The "line sensor" of Federau is a line of "sensor elements 27." Col. 5, lines 1-10. These sensor elements are simply photosensitive detectors, not cameras capable of capturing an entire image. Federau constructs an image from these sensor elements by reading data from the line sequentially, transfers the data elements to an "operating circuit 17, which in turn

generates video signals and transmits them to a subsequent image processor.” Col. 4, lines 14-25.

8. The “sensor elements” of Applicant’s claim 1, on the other hand, are cameras, which capture an entire image of the bore hole at once. See, e.g., application, page 11, lines 28-30: “Lower part 68 comprises the camera enclosure which contains a single image sensor 70 with a wide-angle lens. Image sensor 70 typically includes a CCD-type image sensor.” (The application, at p. 13, lines 18-25 discusses a multiple sensor (camera) embodiment capable of capturing two views at planes ninety degrees apart.) It is well known in the art that CCD’s are “charge-coupled” arrays of photosensitive devices which are employed in television cameras. Such devices capture an entire television image frame. See, Christiansen, Donald, ed., Electronics Engineers’ Handbook, 4th Ed., McGraw-Hill, 1997, Ch. 24.2.

9. The question for this case is whether the “sensor elements” and the imaging system built from them by Federau are the equivalents of the camera system disclosed by applicant. The Federal Circuit has addressed this precise point, and has held that such elements are not equivalents. *Digital Biometrics, Inc. v. Identix, Inc.*, 47 USPQ 2d 1418 (Fed. Cir. 1998). In the *Identix* case, the Federal Circuit held that data generated by a charge-coupled device was not equivalent to data input into image arrays. The Digital Biometrics’ device generated “arrays of slice data characteristic of adjacent and overlapping two-dimensional slices of the fingerprint image.” The Identix device took analog data generated by a CCD fingerprint image, and analyzed that data. “The data that the CCD generates represents a complete image...”. *Identix*, at 1428. Since the “sensing elements” of Federau are not equivalent to the “sensors” of Applicant, and thus not present in Applicant’s claims, the *prima facie* case of obviousness has not been made.

10. Further, the modification of the Federau reference proposed by the Examiner would change the principle of operation of the reference. The Federau

apparatus would have to be changed from a line scanning system to a frame-capturing system. Thus the teachings of Federau cannot render claim 1 *prima facie* obvious. MPEP, § 2143.01, p. 2100-113.

First and second image sensors

11. As stated in the argument above, the multiple “sensor elements” disclosed by Federau are not equivalent to the camera sensors of Applicant. Federau’s sensing elements are embodied into one imaging system, which constructs one panoramic image of the inside of a bore hole, one image slice at a time. See, col. 4, lines 26-33; col. 3, lines 16-22 (two kinds of scanning motions possible). Thus, Federau does not contain the first and second image sensors required by claim 1, and the *prima facie* case of obviousness is not made.

Claim 1 in view of Federau—no teaching or suggestion

12. The Federau reference contains no teaching or suggestion to combine the “sensor elements” into an array such as in a typical CCD camera imager and place this array in a television camera, as does Applicant. Indeed, Federau teaches away from this suggestion. See, e.g., Federau, col. 1, lines 50-68, and col. 2, lines 1-6. Federau cites the “characteristic features” of his “on-line” camera as, among others, that “...each sensor element defines a scanning line with rotational symmetry to the panoramic axis.” Further, that such a camera “...makes it possible to create on-line TV images with large field angles in a very simple manner, and with simple and exact geometric relations between object and image.” Federau points out “important advantages” over TV cameras having raster scans with an “energetic beam,” and scanning over the object space of the image plane of a “conventional TV-camera.” Col. 2., lines 21-39.

13. Federau also points out the possible image distortions and complex geometric relationships between image and object that can result from such “conventional” TV cameras. Col. 2, lines 31-39. The CCD imaging array in a TV

camera such as that chosen by Applicant is a raster-scanning device. See, e.g. Christiansen, cited above, at paragraphs 24.2.5-24.2.8, discussing methods for transferring the television frame from a CCD. Thus Federau not only fails to suggest using TV cameras with CCD sensor arrays as the imaging device for his application, but fails to even mention the scanning of a television frame from such devices. Thus there is no teaching or suggestion to combine Federau's "sensing elements" in his line sensor into a fully functioning TV camera as implemented by Applicant in his claims.

Claim 1 in view of Federau—desirability of claimed invention

14. To make a *prima facie* case of obviousness, the prior art must suggest the desirability of making the claimed invention. No such suggestion is present in Federau. In fact, as discussed in the previous paragraphs, Federau suggests just the opposite; that the use of other than his scanning system has serious disadvantages. On this ground also, the *prima facie* case fails.

Claim 18 in view of Federau

15. Applicant's arguments above regarding the citation of Federau as rendering claim 1 obvious are equally relevant to the Examiner's rejection of Claim 18. The meaning of "sensor" in Applicant's disclosure and Federau are not equivalent, as shown above. Thus not all elements in claim 18 are present in the one reference cited and no *prima facie* case of obviousness is made.

16. Further, Applicant points out that Applicant's sensor (a TV camera) is disclosed to rotate perpendicular to the direction of travel of the housing. As disclosed in Figs. 8a, 8b, and 8c of the application, the image sensor 70 in lower housing 68 rotates approximately ninety degrees to the upper housing 60. In contrast, in Federau, the entire imaging system rotates so that the inside of the bore is scanned by a one-line array of sensing elements. See, discussion of Federau above. Thus, there is no identity of elements and the *prima facie* case of obviousness is not made.

Claim 29

17. The Examiner has rejected claim 29 under 35 U.S.C. § 103(a) as obvious over Federau in view of Barbour and further in view of Berman, et al. However, claim 18 contains the element of a camera assembly, which assembly has:

a single camera operable to capture an image in a first direction, and,
capture an image in a second direction ninety degrees offset from the first direction.

18. Thus, claim 29 contains a limitation not found in Federau, Barbour, or Berman, this being a single camera operable to capture an image in a first and second directions. Barbour discloses two cameras; Berman, et al. disclose a single video camera only to illustrate that it may be carried by the cart which is the subject of the patent. Thus, the *prima facie* case of obviousness of claim 29 cannot be made, since an element of the claim is not found in any of the references cited.

19. Since the independent claims are allowable, as argued above, the remaining claims, being dependent upon the independent claims, are also allowable.

20. Applicant's claims contain other limitations not discussed above which are also not taught or suggested by the combined references. Applicant has not waived his right to rely on these limitations, but believes the above discussion sufficiently shows that no *prima facie* case of anticipation exists.

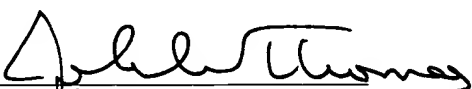
Conclusion

Applicant believes that all claims are now in condition for allowance.

Respectfully Submitted,

GLAST, PHILLIPS & MURRAY, P.C.

By



John A. Thomas
13355 Noel Road, Suite 2200
Dallas, Texas 75240
(972) 419-8378
(972) 419-8329
jathomas@gpm-law.com
Registration No. 29,980

Attorneys for Applicant

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I hereby certify that this correspondence will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date below.

Date: 7 / 12 / 01


John A. Thomas